

Title (en)  
METHOD FOR CHARGING SECONDARY BATTERY

Title (de)  
VERFAHREN ZUM LADEN EINER SEKUNDÄRBATTERIE

Title (fr)  
PROCÉDÉ DE CHARGEMENT DE BATTERIE SECONDAIRE

Publication  
**EP 3595055 A1 20200115 (EN)**

Application  
**EP 19180890 A 20190618**

Priority  
JP 2018132606 A 20180712

Abstract (en)  
Provided is a method for charging a secondary battery configured to both suppress battery short circuits and to reduce battery charging time. The charging method is a multistep secondary battery charging method comprising first charging in which a secondary battery is charged at a first current density I1, and second charging in which the secondary battery is charged at a second current density I2 which is larger than the first current density I1, wherein, when a roughness height of an anode current collecting foil-side surface of a solid electrolyte layer is determined as Y (μm) and a thickness of a roughness coating layer is determined as X (μm), in the first charging, the secondary battery is charged at the first current density I1 until X/Y reaches 0.5 or more.

IPC 8 full level  
**H01M 4/38** (2006.01); **H01M 10/052** (2010.01); **H01M 10/42** (2006.01); **H01M 4/525** (2010.01); **H01M 10/0562** (2010.01); **H01M 10/44** (2006.01)

CPC (source: CN EP KR RU US)  
**G01R 31/382** (2018.12 - US); **G01R 31/387** (2018.12 - KR); **H01M 4/13** (2013.01 - KR); **H01M 4/382** (2013.01 - EP US); **H01M 10/052** (2013.01 - EP KR RU); **H01M 10/0562** (2013.01 - US); **H01M 10/4235** (2013.01 - EP); **H01M 10/44** (2013.01 - KR RU US); **H01M 10/446** (2013.01 - CN); **H02J 7/00** (2013.01 - RU); **H02J 7/007192** (2020.01 - US); **H01M 4/525** (2013.01 - EP); **H01M 10/0562** (2013.01 - EP); **H01M 10/443** (2013.01 - EP); **H01M 2300/0068** (2013.01 - EP)

Citation (applicant)  
• JP 2005185060 A 20050707 - DIACELLTEC KK  
• JP 2002246070 A 20020830 - SONY CORP  
• JP 2002373707 A 20021226 - NEC CORP

Citation (search report)  
• [A] DE 102015112182 A1 20160204 - TOYOTA MOTOR CO LTD [JP]  
• [A] US 2015255998 A1 20150910 - HASEGAWA HAJIME [JP], et al  
• [A] US 2003003364 A1 20030102 - MORI MITSUHIRO [JP], et al  
• [A] US 2011037439 A1 20110217 - BHARDWAJ RAMESH C [US], et al

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3595055 A1 20200115**; **EP 3595055 B1 20220921**; BR 102019013892 A2 20200121; CN 110718721 A 20200121; CN 110718721 B 20220812; JP 2020009724 A 20200116; JP 6965839 B2 20211110; KR 102154143 B1 20200909; KR 20200007668 A 20200122; RU 2708886 C1 20191212; US 11271257 B2 20220308; US 2020020989 A1 20200116

DOCDB simple family (application)  
**EP 19180890 A 20190618**; BR 102019013892 A 20190704; CN 201910619757 A 20190710; JP 2018132606 A 20180712; KR 20190081348 A 20190705; RU 2019121262 A 20190708; US 201916443946 A 20190618